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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

VO, ANH T N

ART UNIT PAPER NUMBER

2861

DATE MAILED: 08/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/021,598

Applicant(s)

SU ET AL.

Examiner

Anh T.N. Vo

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Acknowledgement is made of the receipt of Preliminary Amendment filed 19 July 2005.

Specification

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

CLAIM REJECTIONS

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 8, 10-14, 17 and 19-20 are rejected under 35 USC 102 (b) as being anticipated by Feenstra et al. (US Pat. 4,421,706).

Feenstra et al. disclose in Figures 1-5 a printing head for an ink jet printer comprising:

- an inkjet print head (11, 7, 5, 1, 23) having a plurality of fluid channels (3);
- a plurality of capillary tubes (15), filled with predetermined fluids, disposed on the inkjet print head (11, 7, 5, 1, 23) so as to communicate with the fluid channels (3) respectively and provide capillarity sufficient to prevent the fluids in the capillary tubes from leaking through the fluid channels (3) but not so great as to prevent the fluids in the capillary tubes (15) from dispensing

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through the fluid channels (Figure 1);

- wherein the inkjet print head (11, 7, 5, 1, 23) comprises:

* a base (11), having a plurality of first through holes corresponding to the capillary tubes (15) respectively, for receiving the capillary tubes (Figure 1);

* an inkjet chip (5, 7, 1), for actuating the fluids in the capillary tubes (15) to dispense, disposed on the base (11) and provided with a plurality of second through holes corresponding to the first through holes respectively;

* a nozzle plate (23), for dispensing the fluids in the capillary tubes (15), disposed on the inkjet chip (5, 7, 1) and provided with a plurality of orifices (25) corresponding to the second through holes respectively, wherein the first through holes, the second through holes and the orifices (25) form the fluid channels (3) respectively;

- wherein the inkjet chip (7, 5, 1) is adhered to the base (11);

- wherein the nozzle plate (23) is adhered to the inkjet chip (1, 5, 7);

- wherein the inkjet print head (11, 7, 5, 1, 23) is piezoelectric pressure wave type; and

- wherein the capillary tubes (15) are disposed on the inkjet print head (11, 7, 5, 1, 23) in an array manner (Figures 1 and 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior arts are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are rejected under 35 USC 103 (a) as being unpatentable over Cowger et al. (US Pat. 5,047,790) in view of Feenstra et al. (US Pat. 4,421,706).

Cowger et al disclose in Figures 1-2 an ink jet pen comprising:

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- an inkjet print head (18) having a plurality of fluid channels (not shown);
- a plurality of capillary tubes (10), filled with predetermined fluids (ink), disposed on the inkjet print head (18) so as to communicate with the fluid channels and provide capillarity sufficient to prevent the fluids in the capillary tubes from leaking through the fluid channels (3) but not so great as to prevent the fluids in the capillary tubes (15) from dispensing through the fluid channels (Figure 1) (Figure 1, column 3, lines 15-20).
- wherein the inkjet print head (18) is thermal bubble type (column 1, lines 20-24);
- wherein the inkjet print head (18) is piezoelectric pressure wave type (column 1, lines 25-29);
- and
- a cap (20), with a pressure regulator (22, 24, 30), disposed on the capillary tubes (10) so that the capacity of the fluid in the capillary tube can be enlarged without causing leakage (column 2, lines 35-38).

However, Cowger et al. do not disclose the inkjet print head comprising a base, having a plurality of first through holes corresponding to the capillary tubes respectively, for receiving the capillary tubes; an inkjet chip, for actuating the fluids in the capillary tubes to dispense, disposed on the base and provided with a plurality of second through holes corresponding to the first through holes respectively; a nozzle plate, for dispensing the fluids in the capillary tubes, disposed on the inkjet chip and provided with a plurality of orifices corresponding to the second through holes respectively, wherein the first through holes, the second through holes and the orifices form the fluid channels respectively; wherein the inkjet chip is adhered to the base; and wherein the nozzle plate (23) is adhered to the inkjet chip.

Nevertheless, Feenstra et al. disclose in Figures 1-5 a printing head for an ink jet printer comprising:

- a base (11), having a plurality of first through holes corresponding to the capillary tubes (15) respectively, for receiving the capillary tubes (Figure 1);

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- an inkjet chip (5, 7, 1), for actuating the fluids in the capillary tubes (15) to dispense, disposed on the base (11) and provided with a plurality of second through holes corresponding to the first through holes respectively;
- a nozzle plate (23), for dispensing the fluids in the capillary tubes (15), disposed on the inkjet chip (5, 7, 1) and provided with a plurality of orifices (25) corresponding to the second through holes respectively, wherein the first through holes, the second through holes and the orifices (25) form the fluid channels (3) respectively;
- wherein the inkjet chip (7, 5, 1) is adhered to the base (11); and
- wherein the nozzle plate (23) is adhered to the inkjet chip (1, 5, 7).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of Feenstra et al. in the Cowger et al. ink jet pen for the purpose of providing printing heads which are manufactured very simple and quick.

It has been held that a recitation "each of the capillary tubes is filled with gel-like materials and/or with oil-like materials above the received fluid so as to prevent the fluid from leaking" is the selection of a known material based on its suitability for its intended use and is considered to be a matter of choice for engineer depending upon a particular environment that would have been obvious at the time the invention for the purpose of sealing capillary tubes to prevent ink leakage.

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Anh Vo whose telephone number is (571) 272-2262. The examiner can normally be reached on Tuesday to Friday from 9:00 A.M. to 7:00 P.M.. The fax number of this Group 2861 is (571) 273-8300.


ANH T.N. VO
PRIMARY EXAMINER

July 29, 2005